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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,593	10/31/2005	Motoyuki Ashikari	SHZ-024US	7806
959 7590 06/06/2007 LAHIVE & COCKFIELD, LLP ONE POST OFFICE SQUARE BOSTON, MA 02109-2127			EXAMINER BUI, PHUONG T	
			ART UNIT	PAPER NUMBER
			1638	
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			06/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/534,593

Applicant(s)

ASHIKARI ET AL.

Examiner

Phuong T. Bui

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 4,5,13-15,17 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,6-12,16 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/05, 4/06, 2/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The Office acknowledges the receipt of Applicant's restriction election filed February 16, 2007. Applicant elected Group I, claims 1-3, 6-12, 16 and 18 without traverse. Claims 1-19 are pending. Claims 4, 5, 13-15, 17 and 19 are nonelected. Claims 1-3, 6-12, 16 and 18 are examined in the instant application. This restriction is made FINAL.

Specification

2. The first line of the specification should be updated to indicate parent priority provisional application 60/425919.

Claim Objections

3. Claims 6 and 12 are objected to as reciting nonelected inventions. Correction is required.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 11 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The reproductive material of the transformed plant includes a seed which is not transgenic, and thus reads on a product of nature.

Claim Rejections - 35 USC § 112, 2nd paragraph

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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7. Claims 1-3, 6-12, 16 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, it is unclear what is being retained in the "derived" product. It is suggested that "derived" be deleted. All subsequent recitations of "derived" are also deleted.

In claim 1, "particle-bearing number" is not defined and is not an art-recognized term. While the specification indicated which is included by said phrase (p. 2), it is unclear what other elements are encompassed by said phrase. It is suggested that Applicant recites the actual embodiments given in the specification.

In claim 1, "stringent conditions" is not defined and those skilled in the art define "stringent conditions" differently. While the specification indicated what is included by said phrase (p. 8), it is unclear what other conditions are also considered "stringent". It is suggested that Applicant recites the conditions in the claim.

In claim 3, it is suggested that Applicant inserts "fully" before "complementary", since "complementary" reads on a single base, which does not appear to be Applicant's intention. See also claim 16 (two recitations).

In claims 7-8, it is suggested that "transfected" be amended to "transformed" for proper antecedence and clarification of dependent claims 9-11, which recite "transformed".

In claim 12, it is suggested that "body" be deleted since the claim is drawn to a method for producing a plant. Further, it is unclear how a "plant body" differs from a "plant".

Clarification and/or correction are required.

Claim Rejections - 35 USC § 112, 1st paragraph, written description

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 1-3, 6-12, 16 and 18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claimed invention lacks written description under current written description guidelines.

The claims reciting substitutions, deletions, additions, insertions, their combinations thereof, and sequences which hybridize to SEQ ID NO:1 lack adequate written description because Applicant does not disclose a representative number of species as encompassed by these claims. The claims encompass other genes and their mutants and their allelic variants, yet no other genes or structural variants have been disclosed. The claims also encompass protein sequences other than cytokinin oxidase (CKX) from other species, as the claims are not limited by any recited function. The implication is that there is a gene and a protein other than that disclosed which exists in nature, but the structure thereof is not known. Applicant discloses SEQ ID

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NO:1 (its cDNA is SEQ ID NO:2) isolated from rice whereby deletion of its function increases the particle bearing number (flowers, fruits or seeds) in a plant. No other sequences are disclosed. Thus, there are insufficient relevant identifying characteristics to allow one skilled in the art to predictably determine other gene sequences, their mutants and allelic variants, and sequences from other plants and organisms whereby its deletion of function also increases the particle bearing number in a plant, absent further guidance. In view of the level of knowledge and skill in the art, one skilled in the art would not recognize from the disclosure that Applicant was in possession of the claimed invention at the time of filing. Thus, for the reasons set forth above, the claimed invention lacks adequate written description under current written description guidelines (see Written Description Requirement published in Federal Register/ Vol. 66, No. 4/ Friday, January 5, 2001/ Notices; p. 1099-1111).

Claim Rejections - 35 USC § 112, enablement.

10. Claims 1-3, 6-12, 16 and 18 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for SEQ ID NO:1, 2 or DNA encoding SEQ ID NO:3, does not reasonably provide enablement for sequences having substitutions, deletions, additions, insertions, their combinations thereof, and sequences which hybridizes to SEQ ID NO:1 and 2. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The breadth of the claims encompasses sequences which do not have 100% sequence identity to SEQ ID NO:1, 2 and 3. Moreover, since unlimited substitutions,

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deletions, additions, insertions, and their combinations thereof are recited in the claims, the claims more broadly encompass any sequence whereby its deletion of function increases the particle-bearing number in a plant. No function, such as retaining CKX activity, is recited in the claims. Applicant provided no working example of sequences having less than 100% sequence identity to the disclosed sequences. Applicant has not shown that deletion of function of any protein sequence would have the equivalent effect as deletion of function of the disclosed sequences. It is unlikely that deletion of any protein sequence in a plant would increase the particle-bearing number, as different genes have different functions, and it is highly unpredictable as to which one(s) would, other than Applicant's sequences. It would appear that the claims encompass sequences having CKX activity even though no activity is recited. However, Applicant provided no guidance as to what substitutions, deletions, additions, insertions, and their combinations thereof would be tolerated. Similarly, no guidance is provided for sequences which hybridize to SEQ ID NO:1 and 2 having CKX activity. While one skilled in the art can readily make mutations to the disclosed sequences, further guidance is needed as to what mutations would not abrogate CKX activity.

With regard to claim 18, the breadth of "changing the particle-bearing number of a plant" encompasses both increase and decrease. However, Applicant provided no guidance or working example as to how to decrease the particle bearing number using the same sequences. One skilled in the art would not know how to decrease the particle bearing number in a plant based upon Applicant's disclosure. Furthermore, there is no evidence that adding or having SEQ ID NO:1 in a plant (the opposite of

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deletion of function) would decrease the particle bearing number, since rice naturally contains SEQ ID NO:1.

Given the breadth of the claims and lack of guidance, working examples, and a functional recitation, one skilled in the art cannot make and use the claimed invention as commensurate in scope with the claims without undue experimentation.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

12. Claims 1-3, 6-12, 16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Houba-Herlin et al. (Plant J., 1999, Vol. 17, No. 6, pp. 615-626 (Applicant's IDS)). The breadth of the claims encompasses any mutation to a sequence encoding SEQ ID NO:3. Houba-Herlin teaches a sequence encoding a cytokinin

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oxidase from maize which has 48% sequence similarity to SEQ ID NO:3. Houba-Herin also teaches a vector, plant host cell, clone, plant containing said sequence, reproductive material (plant), and method for producing a transformed plant. The DNA of Houba-Herin would encode an RNA complementary to a transcript of the DNA encoding SEQ ID NO:3. With regard to claim 2, since it is unclear what is retained in the "derived" sequence from rice (see 35 USC 112 second paragraph rejection above), the claim would encompass the sequence of Houba-Herin. With regard to claim 16, since "complementary sequence" reads on a two-nucleotide sequence, it is also anticipated by Houba-Herin. The sequence of Houba-Herin would inherently be an agent for increasing the particle-bearing number of a plant. Accordingly, the claimed invention is anticipated by the prior art.

13. Claims 1-3, 6-12, 16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Morris (USPN 6229066 (A)). The breadth of the claims encompasses any mutation to a sequence encoding SEQ ID NO:3 and thus would read on any cytokinin oxidase. Morris teaches a cytokinin oxidase from maize, vector, plant host cell, plant, offspring, clone, reproductive material, method for producing a transformed plant, and a polynucleotide comprising 31 continuous nucleotides of SEQ ID NO:2. The DNA of Morris would encode an RNA complementary to a transcript of the DNA encoding SEQ ID NO:3. With regard to claim 2, since it is unclear what is retained in the "derived" sequence from rice (see 35 USC 112 second paragraph rejection above), the claim would encompass the sequence of Morris. The sequence of Morris would

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inherently be an agent for increasing the particle-bearing number of a plant.

Accordingly, the claimed invention is anticipated by the prior art.

14. Claims 1-3, 6-12, 16 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Boukharov (US 2007/0020621, filing date March 23, 2001 (B)).

Boukharov teaches a sequence of SEQ ID NO: 68122 which has 100% sequence identity to SEQ ID NO:1. Boukharov also teaches that the sequence is obtained from rice, vector, plant host cell, plant, offspring, reproductive material, method for producing a transformed plant, and at least 15 continuous nucleotides of SEQ ID NO:1. The DNA of Boukharov would encode an RNA complementary to a transcript of the DNA encoding SEQ ID NO:1. The sequence of Boukharov would inherently be an agent for increasing the particle-bearing number of a plant. Accordingly, the claimed invention is anticipated by the prior art.

Conclusion

15. No claim is allowed.

16. Any inquiry concerning this communications from the Examiner should be directed to Phuong Bui, whose telephone number 571-272-0793.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Anne Marie Grunberg, can be reached at 571-272-0975.

The fax phone number for the organization where this application or proceeding is assigned, for sending official correspondence, is 571-273-8300.

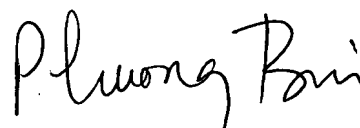
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For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

A handwritten signature in black ink, appearing to read 'Phuong T. Bui'.

Phuong T. Bui
Primary Examiner
Art Unit 1638

05/28/07